

**Designing a Virtual Field Trip Using Google Earth****Learning Objectives:**

- Design and modify placemarks
- Learn how to use basic HyperText Markup Language (HTML) to add images to placemarks
- Assemble placemarks into a virtual field trip.

For the final portion of the Google Earth lab, you will design your own virtual field trip. This “virtual trip” should be based on your interests or previous experiences (i.e. places and topics of interest to you). You may choose to design a field trip based on a specific topic, such as temperature and precipitation variations between different continents. Or, if you have an interest in sports, you may want to focus on the “Big Ten” football stadiums or in history, important battlefields. Thus, before you begin, think through your objectives (e.g. surf web for ideas) and be creative!

**Guidelines**

You can visit anywhere in the world, as long as they are related to each other. For example, if you choose to study climates at different latitudes, then the focus should be climate at each of the locations. There should be a minimum of 3 place-marks, 1 hyperlink, and 1 image (your own, or from the internet). You will be creating a folder to house all of the place-marks that are created as well as any other information relating to the field trip. This folder should contain a brief description of the trip. Instructions for the construction of the field trip are provided in the following sections.

Before you begin to construct the virtual tour, it may be helpful to organize your trip by making a list of stops within the chosen location in the order you want them to be visited.

**Tools available in Google Earth**

*Placemarks* – A placemark is the most basic Google Earth (GE) tool, and it is used to identify a particular location, landmark, geologic feature, or point of interest.

*Hyperlinks* – Hyperlinks can be included in the pop-up window associated with each placemark. Hyperlinks allow users to navigate to a web site that may contain additional information and details related to your field trip.

*Images* – Images add tremendous value to a placemark. Images can become the basis for a specific quest, or can illustrate a feature described in the placemark.

*Overlays* – Overlays are a “value-added” component of GE. Overlays can include images, maps, or diagrams, which correspond to a geographic feature or location on Earth. Once included, an

overlay can appear transparent, and represent an added “layer” of information, much like a GIS system.

## Construction of Field Trip

The first thing you will need to do before you can begin putting together a field trip is to create a folder.

To do this:

1. Navigate to the place frame you want your audience to see when they open the folder. Adjust the zoom and tilt to suit your needs.
2. Click on “My Places” in the places frame to select that destination for the new folder.
3. From the toolbar, click “Add” and then “Folder” (Figure 1). The “New” folder dialog box will appear. Type in a name for your folder. Then type a description of the contents of the folder. Make sure the “Allow this folder to be expanded” box, and the “Show contents as options” box is checked. When you press “OK”, the folder will be created and saved in “My Places”. (Figure 2)



(Figure 1)



(Figure 2)

## Creating a Placemark

Individual placemarks can be added to the folder you've just created. The steps for creating a placemark are similar to those required to make a folder:


1. Navigate to the exact view you want your audience to see when they view the placemark.
2. In the Places frame, click on the folder you want to create your placemark in.
3. From the toolbar, click "Add" and then "Placemark" (Figure 3).
4. In the dialog box that opens, type in the name and description of your placemark (this is the text that will appear when your placemark is displayed in GE) (Figure 4).



(Figure 3)



(Figure 4)

The default placemark icon is , and can be changed by clicking the icon in the New placemark dialog box. The Latitude, Longitude, and View are all set automatically to match the display you set as you began to make your placemark (Figure 4).

### Ordering Placemarks in a Tour

When creating and adding placemarks to a tour folder, each successive placemark will be added to the top of the selected folder in the Places frame. Tours play in order from the top down. Creating placemarks in your folder in a logical sequence will create a 'backwards' tour (i.e. the first location created will be the last 'stop' on the tour). Tour placemarks can be rearranged by clicking and dragging each stop into its appropriate position in the tour list. One suggestion to aid with the re-arrangement of the tour is to number the stops sequentially. When re-ordering the placemarks, 'stop' number 1 should be at the top of the tour folder, and stops should continue in numerical order. Remember, placemarks can be edited at any time.

### Saving and Sharing Folders and Placemarks

Once you have created folders and placemarks in my Places, GE will save them there. But if you want to bring your GE tours to another computer, send them to a friend, or post them to the web, you will have to save them as separate .kml or .kmz files.

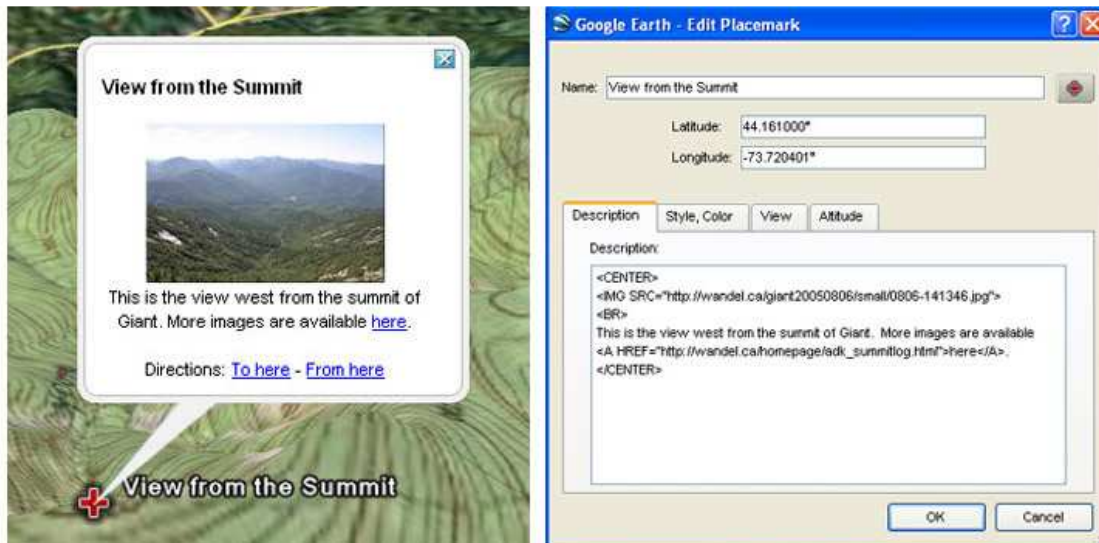
To save a folder or placemark, simply right click the folder/placemark you wish to save, and select "save as". You can save your files in either .kml (Keyhole Markup Language file) or .kmz (Keyhole Markup Zip file) format. It makes sense to save folders containing several placemarks as .kmz files. When you click a .kml or .kmz file in My Computer, it will automatically open with GE.

**\*\*You will save your trip as a .kmz file in your HTML folder, which is located on the H drive in the "Public" folder. Please name the file using your first name initial and last name. You will eventually post this on your website, later in the semester. However, as I do not have access to your HTML folder, you will also need to e-mail me the .kmz file to cindypasl@yahoo.com.**

## Including images and hyperlinks in placemarks

Putting images and hyperlinks neatly into placemarks requires the knowledge of just a little HTML. The following sections will guide you through the basic HTML tags you'll use, and if all else fails, how to "steal" the necessary code from existing placemark descriptions.

The image and information link in Figure 5 was found through a simple Google search for "Giant of the Valley". Using a few HTML tags, it was easy to display the image and link to the site within the placemark description.



(Figure 5)

All instructions, or tags, in HTML are enclosed by < and > brackets. For instance, typing <CENTER> into a placemark description will center all the content - images and text - that follows. A particular instruction can be turned off by placing / within the < and > brackets, before the instruction. </CENTER> will turn off centering, and all content that follows will default to the left margin. The table to the left below contains all the HTML you need to make a good looking and functional placemark. Figures 6 & 7 contain some basic HTML codes that may be useful.

 	<i>inserts a line break into your placemark</i>			
<CENTER>	<i>centers all content that follows</i>	and	</CENTER>	<i>turns centering off</i>
<IMG SRC="URL of image">				
<A HREF="URL of Target Web Page">	hyperlink text	</A>		

(Figure 6)

Description:

**<CENTER>** The <CENTER> "tag" centers the contents of the placemark

**<IMG SRC="http://wandel.ca/giant20050806/small/0806-141346.jpg">**  
 The <IMG SRC=" "> "tag" inserts an image into the placemark. The URL of the image is placed between the " " marks.

**<BR>** The <BR> "tag" inserts a line break in the placemark.

This is the view west from the summit of Giant. More images are available This is simply text that appears in the placemark

**<A HREF="http://wandel.ca/homepage/adk\_summitlog.html">here</A>**  
 The <A HREF=" "> </A> tag creates a hyperlink to an external URL. The URL of the target site is placed between the " " marks. The hyperlink text is placed between the <A HREF=" "> and the </A>. In this case, the word "here" becomes the clickable link to the external site.

**</CENTER>** The "/" in the </CENTER> tag 'turns off' centering. In this case, it is not needed, as no images or text follow.

(Figure 7)

## Re-sizing Images from the Internet

You may want to include images you've found on the internet, but the image size may be too large to fit your placemark. To adjust this, the width and height specifications can be altered by adding <IMG SRC=" "> tag. Follow these steps to resize an image in your placemark:

1. Right click the image you're interested in and select "properties". Jot down the image size on a piece of scrap paper.
2. Multiply both the width and height measurements by the same reduction factor (0.5 will produce an image 1/4 the size of the original), and jot down those new dimensions.
3. Edit your <IMG SRC=" "> tag by adding width and height specs as follows:  
 <IMG SRC=" " WIDTH="your calculated width" HEIGHT="your calculated height">

To reduce an image whose original size is 900 by 387 pixels, for instance, use this IMG SRC tag:  
 <IMG SRC="http://www.stevekluge.com/icecrystals/icecrystalepodweb.jpg" WIDTH="450" HEIGHT="193">.

## Using Your Own Images

Rather than linking to someone else's images, you may want to use your own. While images that you own can be attached to a .kmz file, the image will greatly increase the size of the file and increase file download times as well. It is recommended that you host your images at one of these sites (Flickr, Kodak Gallery, or Yahoo photos). These sites are generally free of charge. Once your picture is up on the host site, you can retrieve its URL by right clicking the image and selecting "properties". You can cut the URL from the properties window that opens and paste it between the " " in the <IMG SRC=" "> tag in your placemark description.

It is quite likely, however, that your images will be the wrong size to fit your placemark. You can resize the images right in your placemark (Figures 6 & 7).

Generally, images will need to be no larger than 450 pixels wide or high, and since they will be viewed on screen, jpg quality can be set to 70% with no significant degradation of appearance.

## Adding map overlays to your field trip

One of the most dramatic things you can do with GE is to drape a map over the three dimensional landscape display. In order to do this, you need a digital image of a map of the area you wish to overlay. There are several sources of such maps: Topozone.com, Maptech.com, USGS, and scanned paper maps (or ask your instructor!). Once you've located the map you want at the scale you want, right click the map and save it to your hard drive with an appropriate name.

Once you've saved the map, upload it to your image hosting site (see the section on using your own images). Right click the map image at your hosting site, view properties, and note/copy the URL of your map image. You will need the URL when you create your overlay.

## Adding an Overlay to the Display

First, make the following adjustments in the Layers frame: turn on "Roads" and turn off "Terrain". You may want to turn off everything else as well.

On the display, Use the navigation controls to set North to the top of the display, and adjust the view so that you are looking directly down on the center of the area where your map will drape over the landscape. Make sure the display area is a little larger than the area your map will cover.

Click on the folder you created in "My Places" to select the destination for the overlay.

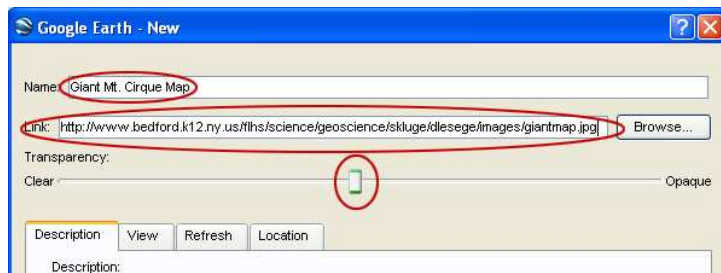
From the toolbar, click "Add" and then "Image Overlay" as indicated to the right. A green square will appear on the display, and the "New" image overlay dialog box will open (Figure 8).



(Figure 8)

Type in a name for your overlay in the New overlay dialog box. Then enter the URL of the map you want to overlay. GE will fetch the map, and place it in the green square on the display. Finally, adjust the Transparency slider to the middle of the scale (Figure 9).





(Figure 9)

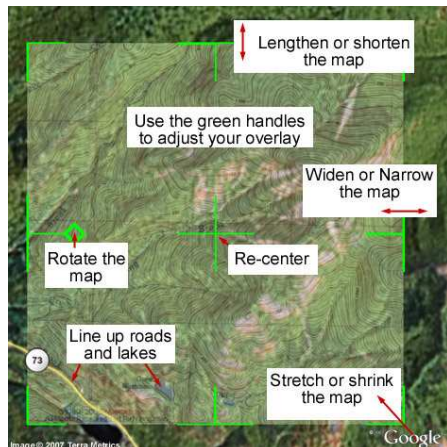
## Adjusting Your Map Overlay

To adjust the position of the map, use your mouse on the green guides to re-center, stretch, shrink, rotate, and otherwise prod the map into position (Figure 10).

Use roads and bodies of water, and any other landmarks that appear on both map and GE display to align the map properly.

You can slide the Transparency: control back and forth to check the "fit" of your overlay too.

When you're done, click "Okay" and GE will save your properly positioned map to your folder in My Places.



(Figure 10)

## Appendix 1

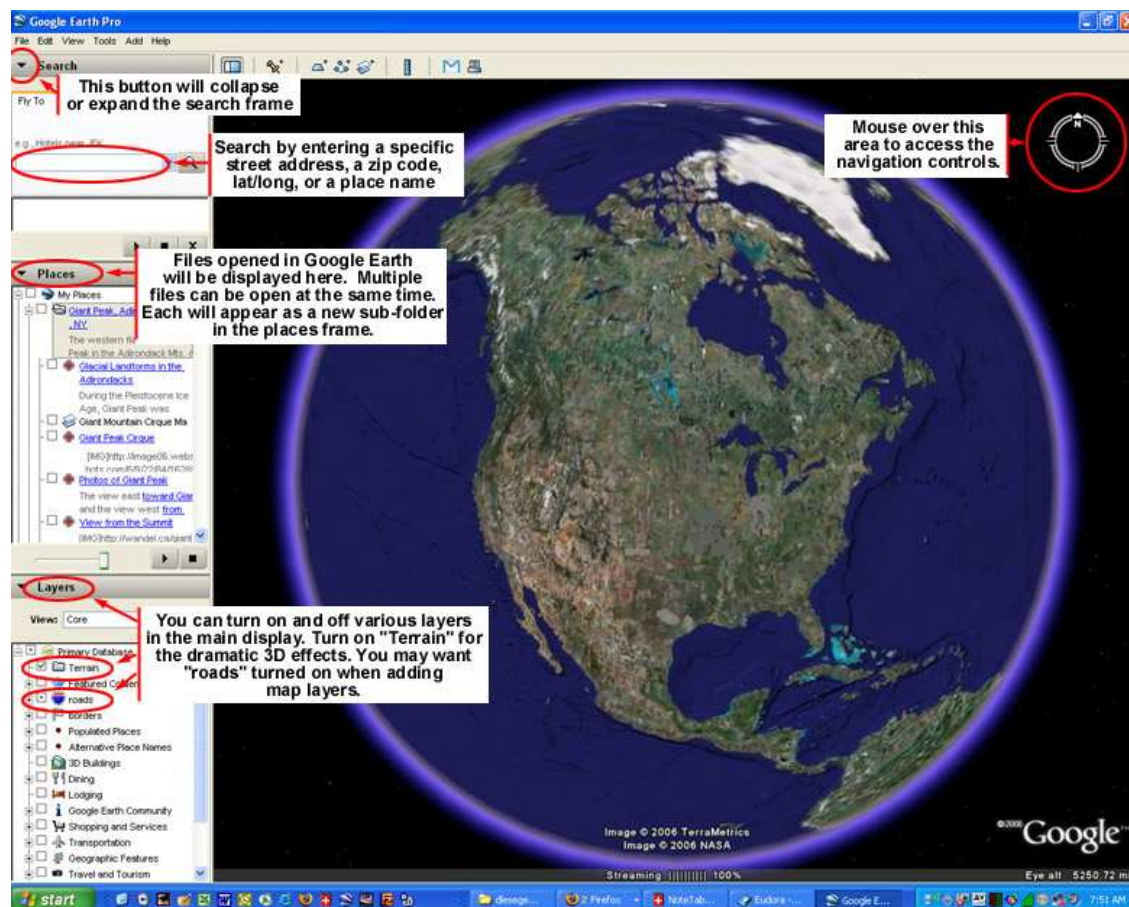
Review of the basic tools for Google Earth

## Downloading and Installing Google Earth

Google Earth can be downloaded from the internet site: <http://earth.google.com>. There are free and paid versions. The paid versions provide the user with more features and function, including the ability to upload GPS data directly into the program. The version you use in lab is Google Earth Pro however, you can do everything you need to do to create the field trip using the free version.

To install the program, visit the web address above and follow their directions.

## Basic Controls





## The View Menu Options

You can add or remove features from the display with the **View** menu (Figure 11). The **Compass** will help you orient yourself as you fly around the display. The **Status Bar** contains lat/long and elevation information. The **Scale Legend** provides a handy map scale in the corner of the display.



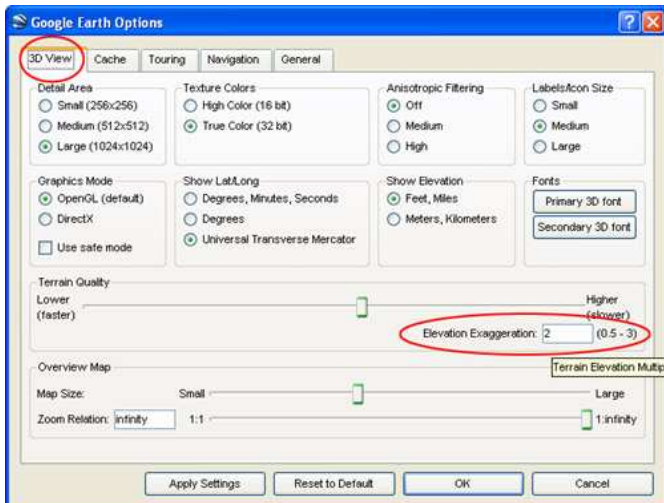
(Figure 11)

## Tools Menu Options

Having both the **Toolbar** and **Sidebar** active will make working with Google Earth more efficient. Several other **Options** are discussed below. You will find that adjusting those options will be necessary from time to time. Clicking Options (Figure 12) will open the window shown in Figure 13.



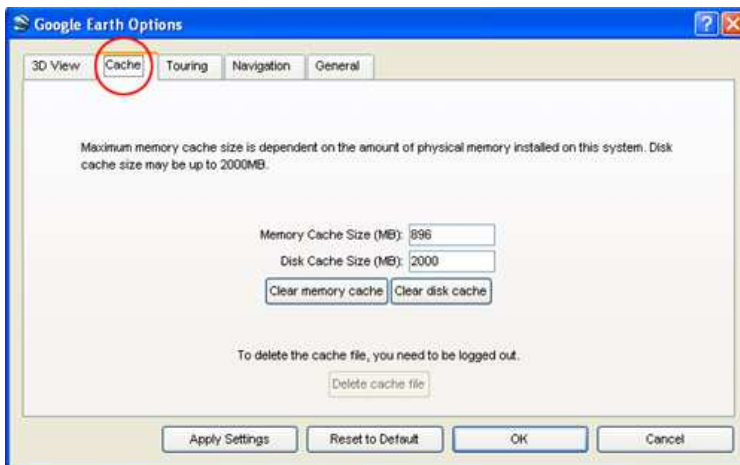
(Figure 12)



(Figure 13)

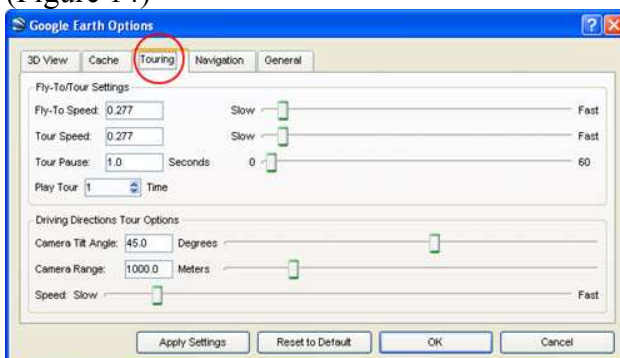
In the **3D View** tab you can set the display to lat/long or UTM and select English or metric units. The most frequently adjusted setting, however, will be the elevation exaggeration. Use a setting of 3 when viewing areas of low local relief, and a lower setting in mountainous regions.

In the **Cache** tab (Figure 14), you can adjust the memory and disk cache sizes that GE creates. If you notice that the program is slowing down, try clearing the memory cache.



(Figure 14)

In the **Touring** tab (Figure 15), you can make adjustments to the tours that you will be creating. Look the options over, but the default setting will work fine for now. If you find later on that your tour flies too fast or slow, come back here to make adjustments.



(Figure 15)